

CHARLES RIVER WATERSHED STUDY

SOCIAL AND ECONOMIC DATA INTERIM MEMO #2

HIGHER EDUCATION

prepared by
New England Division, Corps of Engineers
24 July 1967

Higher Education is a \$100,000,000 per year social and economic export of the Charles River Watershed to New England, the nation and the world.

College student enrollments per thousand 1965 resident population were some 142 per thousand in the Watershed, $37\frac{1}{2}$ in Massachusetts, nearly 33 average in New England, and only 29 per thousand U.S.A. population (see Table 1). Thus total college enrollments in the Charles River Watershed in 1965/66 were nearly five times the national average, and more than four times the New England average enrollment per thousand resident population. The Watershed is exporting higher education.

The export of higher education brings in to the Watershed economy an estimated \$100,000,000 per year or more, of which some \$54,000,000 is payrolls to faculty and administration personnel (full-time and part-time) paid on behalf of college students enrolled in the Watershed from non-Watershed homes. The other \$46,000,000 is from presumed non-tuition spendings in the Watershed by these same students from non-Watershed homes.

The estimated \$54 million college education export payroll was derived from the 9,960 Watershed full-time faculty and administration jobs reported in the 1967 Fact Book of the New England Board of Higher Education, plus the 2,170 or more part-time faculty and administrative jobs also reported by N.E.B. Perhaps on the average some \$7,500 per annum were paid each

full-time person, and some \$3,000 total average per annum to each part-time faculty or administrative person. If so, higher education gross payrolls in the Watershed might be thought to aggregate \$81 million or more per year, of which two-thirds or more are presumed earned from the "export" students, i.e. \$54,000,000 or more.

The New England Board of Higher Education reported some 94,300 full-time college students (graduate and undergraduate, men and women) enrolled in Watershed colleges as of autumn 1966. Two-thirds or more of these 94,300 full-time students were estimated to be from outside the Watershed. This estimate was based on the following two presumptions:

- 1) that the Watershed population (ca. 829,000 in 1965) is about one-third that of the entire metropolitan urbanized area of eastern Massachusetts, centering on Boston;
- 2) that, in the aggregate the Watershed colleges together accomplish the national average share (or more) of the higher education of all eastern Massachusetts college-age residents.

Thus, it was estimated that of 94,300 full-time college students enrolled in Watershed colleges, two-thirds or more, i.e., 63,000 were "export" students from outside the Watershed. And it was estimated that they spend on non-academic lodgings, meals, laundry, clothes, automobile, entertainment and sundry an average per student of \$20 per week for the 40 week academic year, or \$800 or more per calendar year. This gave rise to the estimated \$46,000,000 of "other" spending in the Watershed.

The numbers tabulated below are from three published sources: the U.S. Census; the 1967 U.S. Pocket Data Book, referred to as "PDB"; and the 1967 Fact Book of the New England Board of Higher Education, referred to in the tables below as "NEB".

TABLE 1
COLLEGE ENROLLMENT RATIO COMPARISONS PDB/NEB

	a) U.S. Census 1965 Pop'n 1,000's	College Students Enrolled Regardless Domicile PDB 1965 1,000's	Ratio Students per 1,000 Local Pop'n 1965	b) U. S. Census 1966 Pop'n 1,000's	College Students Enrolled Regardless Domicile NEB 1966 1,000's	Ratio Students per 1,000 Local Pop'n 1966
U.S.A.	133,795	5,675	29.3	195,857	—	—
NEW ENG.	11,145	366	32.8	11,225	342	30.5
MAINE	986	21	21.3	983	18	18.3
NEW HAMP.	673	20	29.7	681	20	29.4
VERMONT	404	13	32.2	405	15	37.0
CONN.	2,830	79	27.9	2,875	66	23.0
RHODE IS.	891	32	35.9	898	28	31.2
MASS' TTS	5,361	201	37.5	5,383	195	36.2
C H A R L E S R I V E R W A T E R S H E D				829	118	142.3

TABLE 1, above, offers two sets of college enrollments by states of New England: a) the U.S.P.D.B. for 1965 enrollments; b) the NEB reported enrollments of autumn 1966. A USA national ratio was developed in the PDB series, but this series did not have Charles River Watershed data. The NEB series afforded Watershed data, but none of national scope.

Both parts of Table 1 show college enrollment numbers and enrollment ratios per thousand local population, regardless of the student's geographic home domicile. Thus Table 1 affords an indication of comparative intensity of higher education activity in each state or designated geographic area. This is not a direct measure of collegiate education accomplishment by the residents of that state.

Table 2, below, shows the numbers of college-attending residents of each state, regardless where, geographically, they are enrolled. So the ratios of Table 2 do indicate the varying levels, state by state, of collegiate education attendance in 1960 among all the college-age residents of that state, up to age 34.

TABLE 2

	U.S. Census 1960 Population (1,000's)	State Residents Enrolled in Colleges Anywhere PDB (1,000's)	Ratio Enrolled in College per 1,000 Population
U.S.A.	179,323	3,570	19.9
NEW ENG.	10,509	208	19.8
MAINE	969	12	12.4
NEW HAMP.	607	11	18.1
VERMONT	390	9	23.1
CONN.	2,535	42	16.6
RHODE IS.	859	15	17.5
MASS'TTS	5,149	119	23.1

From Table 1 a), there were enrolled in 1965 at colleges in Massachusetts $37\frac{1}{2}$ students per thousand Massachusetts resident population. From Table 2, we see that some 23 persons per thousand Massachusetts residents, 1960, were then enrolled in college somewhere, regardless where. By direct subtraction, it might be said that only 40% or so of reported enrollments in Massachusetts colleges, were for "export"; that is, $14\frac{1}{2}$ of the $37\frac{1}{2}$ per thousand reported in Table 1 a), after deducting 23 local.

Similarly, in the Charles River Watershed, if 23 college students per thousand local residents represent the Watershed average collegiate attendance of 1960 (Table 2), then 119 students per thousand local residents represent enrollees from outside the Watershed. ($119 + 23 = 142$: Table 1, b). By this measure, if valid, only about one-fifth of Watershed collegiate education is of local residents, and four-fifths is "export" education of students from "away" enrolled at colleges in the Watershed.

Despite the five-year time difference between Tables 1 and 2, it is felt that Table 2 affords a usable measure of state-average collegiate attendance custom to apply against Table 1 to check prior estimates of two-thirds or more "export" of higher education from Watershed colleges. The Watershed estimate of two thirds or more "export" appears in range and safely conservative.

The geographic concentration of colleges in the Charles Watershed is notable both as to numbers and kinds of institutions, and as to student numbers currently enrolled.

Of 224 degree-granting collegiate institutions in New England listed in NEB, 105 are in Massachusetts, and 49 are in the Watershed. 41 of those

49 were clustered close to one another in Boston, Brookline, Cambridge, Chestnut Hill and the rest of Newton. The remaining 8 were located one each in Watertown, Waltham, Weston, Natick, Dover, Franklin, and two in Wellesley. A 50th collegiate institution was listed by NEB in Dedham, but no 1966 enrollment figures nor faculty data were reported.

The 49 Watershed institutions together enrolled 118,030 students total, per NEB, in the fall of 1966. This was more than one-third of all New England enrollments (342,610) and was three-fifths of all Massachusetts enrollments (195,654) that year, per NEB. The Watershed resident population was only one-seventh of Massachusetts 1965 population.

The 49 Watershed colleges together enrolled 73,181 full-time undergraduate students (43,871 men; 29,310 women) plus 21,142 full-time graduate students (17,609 men; 3,533 women) in the fall of 1966.

The 21,142 Watershed graduate student combined total was more than three-fourths of all New England enrolled full time graduate students in the autumn of 1966. Also the 49 Watershed colleges enrolled more than half of all New England full-time women graduate students (6,453), and nearly two-thirds of all New England men full-time graduate students (27,618).

Eighteen of the 49 Watershed degree-granting institutions enrolled 1,000 or more students the fall of 1966 per NEB, as follows:

Boston

State College at Boston	3,723
University of Massachusetts, Boston only	2,151
Bentley College	1,961

Boston (Cont'd)

Boston University	18,163
Emerson College	1,072
Emmanuel College	1,367
Northeastern University	31,737
Simmons College	2,067
Suffolk University	2,662
Wentworth Institute	2,241

Cambridge

Harvard University	13,564
Radcliffe College	1,215
Mass'tts Inst. Technology	7,567

Chestnut Hill

Boston College	8,578
----------------	-------

Watertown

Mass. Bay Community College	1,222
-----------------------------	-------

Waltham

Brandeis University	2,549
---------------------	-------

Weston

Regis College	1,122
---------------	-------

Wellesley

Wellesley College	1,775
-------------------	-------

The likely continuance in the Watershed of many of these and other institutions of higher learning is suggested by the 330+ year existence of Harvard, and the near-century ages of M.I.T., Boston College, Boston

University, Wellesley College and Radcliffe College. Three of the newest in the Watershed are University of Massachusetts (Boston), 1965, Massachusetts Bay Community College, 1961, and Brandeis University, 1948.

The Charles River Watershed university graduate schools, colleges, institutes, libraries, museums, laboratories, teaching hospitals, research corporations, and affiliated or ancillary facilities, together constitute a compact cluster of national and international importance. In the Western world, no other cluster directly comparable as to size, variety and academic excellence in so small a geographic compass comes quickly to mind. For the Corps study, it is important to note the probability of many centuries continuance, as well as probable near future growth in variety and numbers of Watershed institutions.

This academic cluster is sharply concentrated in the Charles River Basin portion of the Watershed. Of 49 Charles River institutions, 38 are located downstream of Watertown Dam. The existence of this cluster includes needs and reasonable demands as to Lower Charles River water flow and water quality characteristics, also water-related recreation (active-passive) and water-use and water-disposal.

The Charles River Basin flooding vulnerabilities of these and other institutions, including the great hospitals, also the Boston Museum of Fine Arts, require serious consideration.

In addition, the presence and relative fixity of these great institutions requires rather near at hand a large variety and volume of residential housing types, equivalent to the whole City of Cambridge, with corresponding service and water needs. More than 94,000 full-time students